

The growth of e-health services focused on mental health

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Abstract

The paper brings an overview of services based on the use of information and communication technologies which are aimed at mental health. The current growth of e-health presents many opportunities and challenges for public health. Provision of interventions targeting mental health and wellbeing is an important domain of the e health environment. In Poland, we also face a rapid development of online psychotherapy services called also e-therapy. Other terms are also in use. Clear recommendations and regulations are needed to address the potential risks of such interventions. E-therapy has the potential to offer many benefits, both for patients and therapists. Available results from clinical trials support its further development. Depending on the types of conditions targeted by e-therapy and communication channels, the effectiveness of interventions may differ. However, accumulated evidence shows that e-therapy may be as effective as traditional mental care. On the other hand, the growing numbers of e-services targeting mental health and psychological support results in higher risk of misconduct or malpractice.

Key words: e-health, e-therapy, psychotherapy online, telemedicine, telepsychiatry

Słowa kluczowe: e-terapia, e-zdrowie, psychoterapia online, telemedycyna, telepsychiatria

Introduction

Telemedicine relies on the delivery of health-related interventions by technological means. The first proposals for the use of new inventions in telecommunications for medical purposes date from the beginning of the 20th century. However, the first mature telemedicine applications became available in the late 1950s. Interestingly, one of the most advanced early telemedicine programmes from this period was developed in psychiatry by Wittson from the Nebraska Psychiatric Institute in the USA [1]. The main focus of telemedicine sessions established by this Centre was the provision of teleconsultations to general practitioners.

‘Telemedicine’ is usually understood as the use of computer and telecommunication technologies (ICT) for the provision of medical services. However, some authors propose a broad understanding of telemedicine as the provision of health-related services with the use of technological support, including not only medical care, but also non-clinical activities, e.g. public health activities [2].

The growth of the Internet has resulted in dramatic changes in modern societies. It has changed the way people communicate and access information all over the world. The Internet has also changed the perception of remotely-provided health services. The provision of health services via the Internet was dubbed ‘e-health’ in much the same way as services in other areas were dubbed ‘e-commerce’ or ‘e-business’. The term quickly became so popular that it replaced ‘telemedicine’ in many contexts. One of the first definitions of ‘e-health’ was proposed by Eysenbach in 2001. According to this author, “e-health is an emerging field in the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the Internet and related technologies” [3].

The Internet offers a broad spectrum of possible health-related solutions, especially today, when Web 2.0 services are common [4]. The use of advanced interactive applications, including social media, for health-related activities, has been termed ‘Health 2.0’ or ‘Medicine 2.0’. Exploration of the Web 2.0 environment for interac-

tion and cooperation between stakeholders involved in health care was repeated in many definitions of Health 2.0 published from 2007 [5]. The term 'Medicine 2.0' is used as a synonym for Health 2.0, but some authors underline the broader meaning of the latter. The review of definitions made by Hughes et al., indicates that in the case of Medicine 2.0, the aspects of cooperation and personalised health care are more frequently emphasized [6].

Among many e-health services, interventions focused on psychological support and psychiatric care remain one of the key areas of development. They range from websites offering various forms of counselling to anonymous users, to advanced applications enabling synchronous interactions between patients and health care providers or between health care professionals themselves.

1. Types of psychological and psychiatric interventions delivered with ICT

There are many terms used in relation to applications based on Internet and other communication technologies enabling delivery of services focused on mental health. The most common ones are 'telepsychiatry', 'psychotherapy online', 'e-therapy', 'therapy online' (or 'online therapy'), 'cybertherapy', and 'counselling online'. Their precise meaning is not always clear and they are frequently used interchangeably, both in the literature and on Internet sites providing services.

The use of information and communication technologies in psychiatry may be treated as a form of telemedicine. It is usually referred as 'telepsychiatry'. According to the definition formulated by Brown, 'telepsychiatry' means "the use of telecommunications technology to connect patients and health care providers, permitting effective diagnosis, education, treatment, consultation, transfer of medical data, research, and other health care activities" [7]. This term is applied both in relation to interaction between health care professionals (in the business-to-business model of services) or between patients and health care professionals (the business-to-consumer model). 'Telepsychiatry' is usually applied in the context of institutional care. In the case of services offered to patients, it usually designates continuation of support or services complementary to care initiated in the traditional face-to-face way. This precludes the anonymity of the person receiving support from a health professional certified to offer psychiatric care. Many scenarios of telepsychiatric support were explored in the 1950s and 1960s by Wittson [1].

The growth of the Internet has resulted in the development of health-related online services which also target mental health. The provision of psychotherapy on the Internet may be more flexible than in classical telemedicine settings. Many websites which claim that they provide psychological counselling and/or psychotherapy services do not require the identification of their customers. This leads to the situation where a therapist providing an online service is aware only of the information about customers or patients which they want to reveal to him.

The terms 'psychotherapy online' and 'e-therapy' – with other variants ('cybertherapy', 'online therapy') – are used practically interchangeably by various sources in relation to Internet services targeting mental health [8]. As most telemedicine activities are based on the Internet and/or mobile solutions nowadays, the scope of telepsychiatry overlaps considerably with psychotherapy online and e-therapy.

One of the first definitions of 'e-therapy' was proposed by Grohol in 1997. According to this author, 'e-therapy' meant "using an Internet-mediated technology to foster a helping relationship online" [9]. Interestingly, Grohol pointed out that e-therapy is neither psychotherapy nor psychological counselling, as it does not allow for the diagnosis and treatment of medical disorders [10]. In 2001, e-therapy was defined by Manhal-Baugus as mental health services provided by "a licensed mental health care professional" via e-mail, video conferencing, virtual reality technology, chat technology, or any combination of these [11]. This definition underlines the meaning of 'licensed professional' as a provider of service. The author also enlists the key modes of communication available on the Internet to maintain an interaction between provider and customer/patient. In turn, Rochlen defined 'online therapy' as "any type of professional therapeutic interaction that makes use of the Internet to connect qualified mental health professionals and their clients" [12].

In Polish literature and web sources, there are also many synonyms relating to mental health care services on the Internet. Apart from 'psychoterapia online' ('psychotherapy online'), other popular terms include 'wsparcie psychologiczne online' ('psychological support online') [13, 14], 'porady internetowe' ('internet counselling') [15, 16], 'pomoc psychologiczna online' ('online psychological help') [17, 18], and 'e-terapia' ('e-therapy') [19, 20]. On websites or portals providing diversified forms of support, some of these terms are used interchangeably in order to describe their offer to users or patients.

The need for appropriate taxonomy and regulation of health services targeting mental health in the e-health environment resulted in the development of guidelines and practical recommendations. The American Psychological Association's Ethics Committee issued a statement on services by telephone, teleconferencing, and Internet [21]. In 2000, guidelines for the use of ICT for provision of services focused on mental health were issued both by the British Association for Counselling and Psychotherapy and by the International Society For Mental Health Online [22]. Recently, a document containing standards for distance professional services was issued by the National Board for Certified Counselors (NBCC) [23]. A statement on the practice of telemental health was also issued by the American Telemedicine Association [24]. This was followed in 2013 by guidelines for delivery of video-based services relating to mental health [25]. In Poland, the Certificate of Online Counsellor (Certyfikat Doradcy Online) is issued by the Polish Therapeutic Association (Polskie Towarzystwo Terapeutyczne) [26].

The use of various types of ICT for provision of health-related services led to many solutions and applica-

tions. According to the model proposed in 2000 by Suler, there are five dimensions which can be used to describe the communication pathway maintained between therapist and customer on the Internet [27]. These dimensions encompass time of communication (synchronous or asynchronous), form of communication (text or sensory), the use of imagination (actual or imaginary), proportion of human and computer-based actions (automated or interpersonal) and finally, presence and visibility (or invisibility) of a therapist and a customer (invisible or present). The five dimensions used in this model should be interpreted as bipolar features with a gradient between extremes, but also with possible overlapping between them.

The dimensions of the Internet and computed-mediated psychotherapy described by Suler overlap to some extent with the categories of taxonomy of telemedicine (and also e-health) applications developed by Tulu et al., [28]. The criteria used for the classification of telemedicine applications proposed by Tulu encompassed: purpose, application area, environmental setting, communication infrastructure and delivery options [28]. According to this taxonomy, interventions performed online in relation to mental health fall into the area of applications with a clinical purpose (e.g. diagnostics, non-surgical treatment, consultation, monitoring). The area of application may be defined as psychiatry or clinical psychology. The environmental settings cover many types of setting, facilities or professionals taking part in the interaction. In the case of telepsychiatric contacts between health professionals, the interaction usually occurs between hospitals, polyclinics, ambulatory care centres, or individual medical practices. In the case of typical online services, an interaction is usually maintained between a mental health professional (or appropriate institutional provider) and, via a mobile or remaining at home, the patient or customer. Telecommunication infrastructure depends on the means of access to the global network exploited by the participants in the interaction. Finally, the criterion of delivery options defines modes of interaction (asynchronous vs. synchronous) and types of data which are exchanged during an interaction (data, audio, video). The mode of interaction (asynchronous vs. synchronous) is especially important in the context of online therapy targeting mental health, as it influences the ability of the therapist to assess a patient. Synchronous interactions enable real-time contact between a patient or consumer and a therapist. They may be carried out with such tools as a telephone, online chat, or video teleconferencing. In the latter case, the scope of information reaching a health care professional is most extensive, as he or she can see the reactions and behaviour of a patient. Asynchronous interactions assume a delay between the transmission of the request for support and its provision by a health care professional.

Barak classified Internet-supported interventions into four categories. They include: web-based interventions; online counselling and therapy; Internet-operated therapeutic software; and other online activities [8]. Web-based interventions are based on a self-guided program available online and used by consumers in need of

health-related assistance. Online counselling and therapy is based on services provided by professionals via such channels as e-mail, chat, or video teleconferencing. Internet-operated therapeutic software covers rule-based expert systems, and gaming (in relation to health and other not-exclusively for entertainment purposes applications, the term 'serious gaming' is currently used). Finally, other online activities encompass the use of blogs, online support groups, podcasts, online assessments, and other tools offered by the Web 2.0 environment. Polish authors proposed their own classification of specialist psychological help online, consisting of four categories: information and education services; counselling and coaching; crisis intervention; and psychotherapy [18].

2. Premises and effectiveness of e-therapy

The growth of e-therapy is propelled by potential advantages to recipients or providers of services. The most important benefits of online interactions emphasised in the literature include ease of access, convenience, anonymity, and empowerment. Many authors underline that, in common with other e-health applications, e-therapy improves access to services. Better access to psychiatric and psychological support may be particularly important for customers who reside in geographically isolated areas or are part of underserved populations [12, 29]. Furthermore, e-therapy may be more accessible to persons whose mobility is limited due to illness, disability, transportation problems or family obligations [12, 30]. For example, it can be also used by informal carers providing long-term care to family members. E-therapy is also appreciated for its convenience. Customers or patients who are professionally and socially active benefit from the fact that it can be provided without time and place restrictions [11, 30]. Furthermore, in most models of e-therapy services, they can ask for help when they feel it is most needed [31]. Services based on asynchronous communication also allow for higher flexibility in the therapist's working schedule [27, 32].

Some types of e-therapy services may be provided without revealing the identity of a customer. This anonymity may increase the customer's ability to disclose personal information [11, 32]. It may also decrease the social stigma associated with using of mental health services [27].

Patient empowerment is one of the attributes of e-health services indicated by Eysenbach [3]. This attribute is also inherent in e-therapy. The patient receives more autonomy and independence in their relationship with a therapist. Furthermore, empowerment means that they are responsible for making decisions about seeking help [33–35].

Apart from the benefits described above, some authors also indicate other attributes of e-therapy, e.g. the therapeutic effect of the patient describing (writing or talking) their own emotions, protection from negative emotions felt by the counsellor/therapist, easier self-disclosure than in the case of face-to-face care, and disinhibition [12, 27, 36–38].

The decrease or optimisation of expenditures in health care is one of key drivers of the development of e-health applications. It is also one of the benefits underlined in the case of e-therapy [39]. Provision of such services may potentially result in reduced travelling costs for patients and therapists. Furthermore, savings may result from closer monitoring and assistance, maintained continuity of care, and improved quality of care [40].

In 2008, Barak et al., published the results of meta-analysis of effectiveness of online therapy. The meta-analysis encompassed 92 studies published until March 2006 [41]. The total number of subjects involved in these studies reached 9,764. The studies addressed a broad range of conditions and interventions, including problems with body image, smoking cessation, weight loss, excessive drinking, depression, panic and anxiety, and post-traumatic stress disorders (PTSD). According to the meta-analysis, the effectiveness of interventions delivered over the Internet was comparable to traditional psychotherapy. The size of achieved effect was highest in case of PTSD, panic and anxiety, and smoking cessation. According to the authors, online therapy may be more suitable for dealing with problems with a clear psychological background and related to emotions, thoughts and behaviours, than with conditions stemming from physiological or somatic processes. As for the strategies of the interventions, a cognitive-behavioral approach seemed to be the most efficient. Individual therapy was more effective than group therapy. The greatest effect was seen between the ages of 25–39 and 19–24 years. The general conclusion of the meta-analysis is a statement about the moderate effectiveness of online therapy (overall mean weighted effect size of 0.53)

In 2008, another team published the results of a meta-analytic review of psychotherapy mediated by remote communication technologies, including telephone, Internet or videoconferencing [42]. In their final review, 10 studies examining interventions based on telephone, two studies based on the use of the Internet, and one on the use of videoconferencing, were included. Interestingly, the pooled effect size for remote therapy in comparison to control interventions was 0.44 for depression and 1.15 for anxiety-related disorders.

The review published by Hanley and Reynolds in 2009 was carried out only on the studies included in the meta-analysis reported by Barak et al., which assessed synchronous or asynchronous interactions with a therapist (human-to-human contact) [43]. In 27 studies, the effect size differed depending on communication modality from 0.31 for webcam to 0.91 for audio communication. These authors also reviewed studies reporting on the online therapeutic alliance and concluded that there is persuasive evidence to overrule the theoretical assumptions that sufficient quality of relationship cannot be established online. The aspect of therapeutic alliance was also analysed in the study of Sucala et al., published in 2012 [44].

In 2009, Cuijpers et al., published the results of a meta-analytic review on computer-aided psychotherapy for anxiety disorders [45]. Interventions delivered over the

Internet, via stand-alone PC or palmtop, were analysed. The review demonstrated that computer-aided interventions may be as effective as face-to-face psychotherapy. Gainsbury and Blaszczyński published in turn a systematic review of online therapy applied to the treatment of addictions [46]. They concluded that Internet-based therapy for addictions is effective in achieving positive behavioural changes.

Clinical efficacy and cost-effectiveness of cognitive behaviour therapy provided via the Internet were assessed in a systematic review by Hedman et al., [47]. According to these authors, CBT delivered over the Internet demonstrates equivalent effects to conventional CBT. It tends also to be more cost-effective. Effect size estimated by them were large in the treatment of depression, anxiety disorders, severe health anxiety, irritable bowel syndrome, female sexual dysfunction, eating disorders, cannabis use, and pathological gambling.

Recently, a systematic review of individual synchronous interventions using chat in counselling and therapy for mental health problems was published [48]. This states that there is emerging evidence supporting the use of online chat, but that the quality of available studies is insufficient to make more concrete conclusions.

3. Risks related to Internet-based interventions

The provision of mental health services online is associated with many reservations. Some of them are common for the whole e-health sphere. Others are specific to e-therapy due to the perception of the special type of relationship which should be achieved between patient and therapist.

The main areas of risk identified by various authors include unconfirmed effectiveness, malpractice, inadequate legislation, insufficient security and confidentiality of patient's or client's data, limitations of patient status assessment, limited options for intervention in emergencies, increased feeling of isolation, and technical failures.

Currently, the introduction of e-health services requires similar evidence to other medical services and interventions, provided in the traditional way. Furthermore, guidelines governing the realisation of randomized clinical trials involving e-health solutions have been proposed [49]. Such an approach should result in the provision of reliable and convincing evidence about the effectiveness of specific services, including online interventions targeting mental health.

The Internet may be also used by persons without appropriate competencies and credentials who impersonate therapists. Clients who are not aware of such malpractice may potentially be deceived.

Although many websites providing online psychotherapy display visible information about the certifications of their therapists, users demonstrating low e-health literacy may be the victims of different forms of malpractice [50]. Rapid technological progress leads to many situations in which legislation in specific countries is not adequate for the available technical means of service provision. The need for appropriate regulations and ethical guidelines

was signalled earlier [39, 51–53]. Guidelines and codes of ethics for providers of various forms of e-therapy have also been suggested. The American Psychological Association (APA) released in 2013 *Guidelines for the practice of telepsychology* [54]. This document provides recommendations for professional behaviour and conduct for psychologists who offer their services using telecommunication technologies. However, clear regulations for e-health services, including psychotherapy online, are still needed in many countries, including Poland.

As information exchanged between the patient and therapist on the Internet may be also a subject of abuse, appropriate technical and organisational security should assured by providers of e-therapy. This should at least considerably decrease the risk of unauthorised access to confidential personal data [39, 51].

It is also clear that, depending on the options of e-therapy service delivery, the scope of information which can be used by a therapist may be different. The use of communication based on text messages does not allow for professional assessment of non-verbal signals coming from the patient. Limited information about the patient may lead in turn to a restriction of the forms of diagnostic and therapeutic tools which can be applied [39]. It can also be a potential source of misunderstanding between a therapist and a patient (or a client) [12]. The use of on-line interventions may be potentially ineffective or even harmful in emergency situations, e.g. suicidal attempts or in acute exacerbations of psychotic disorders [39].

The use of Internet services may potentially lead to a deepening of the isolation of some patients. Others may be inclined to move most of their activities to the virtual world instead of real-life interactions [39].

The reliability of technical solutions is always a valid issue. Unstable or low-bandwidth connections may hamper therapeutic relations. Benefiting from e-therapy also requires some technical competencies on both sides. In the landscape of a rapidly developing information society, the problem of insufficient computer literacy is decreasing. However, there are still social groups which suffer from the 'digital divide'.

Summary

Following two decades of development, the e-health domain covers many types of solutions and applications. Provision of the services electronically is no longer controversial; however, formal and legal barriers are still present in some countries. Various forms of support related to mental health provided online remain an important area of the e health environment.

Although the first telemedicine applications in psychiatry emerged during the 1950s, and e-therapy has been widely available in many countries since the turn of the century, we still lack unambiguous nomenclature and taxonomy of e health services focused on mental health.

Evidence from increasing numbers of trials targeting interventions based on e therapy indicates that it can be as effective as traditional services. Although the effectiveness may differ depending on the medical conditions

and types of channel used for interventions, the overall outcomes from e-therapy are encouraging.

Due to its accessibility and convenience, e-therapy meets the goals of patient and citizen empowerment. However, the growing numbers of e-services targeting mental health and psychological support mean a potential increase in the risk of misconduct or malpractice. As such, e-therapy may present a challenge for public health policies.

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